

Electrochemical Models

PDE Grounded

ECM/Phenomenological

Electrical Components

Data-Driven/Black Box

ANN & Fuzzy Logic

SOC Estimation & Battery Dynamics Modeling

ECM

Pros

simulating the transient response of the terminal voltage

Cons

inability to explain the non-linear recovery effect

KiBaM

Pros

explaining the diffusion-limited recovery effect & Peukert's Law

Cons

inability to output the terminal voltage directly

Mainstream Approaches